CLAIMS

What is claimed is:

1. A surgical tool for connecting a graft vessel to a target vessel at an anastomosis site, comprising:

an anvil; and

a shield movable relative to said anvil, at least part of said shield configured to be positioned in proximity to the anastomosis site to protect the graft vessel.

2. The tool of claim 1, wherein said shield is connected to said anvil.

3. The tool of claim 1, wherein said shield includes an aperture therethrough.

4. The tool of claim 1, wherein said shield is substantially longitudinally aligned with said anvil.

5. The tool of claim 1, wherein said shield includes a first section and a second section raised relative to said first section.

6. The tool of claim 5, wherein said shield further comprises a ramp element connected to said second section.

7. The tool of claim 5, wherein said first section is substantially straight.

8. The tool of claim 1, wherein at least part of said shield is elastically deformable.

9. The tool of claim 1, wherein at least part of said shield is plastically deformable.

10. The tool of claim 1, wherein at least part of said shield is composed of polyethylene.

11. The tool of claim 1, further comprising a connector holder movable relative to said anvil, wherein said shield is connected to said connector holder.

12. A surgical method for manipulating a graft vessel and a target vessel, comprising:

placing an end of the graft vessel against the side of the target vessel;

placing a shield between the end of the graft vessel and the side of the target vessel; and

moving a cutter to incise the target vessel, wherein said shield protects the graft vessel from the cutter.

13. The method of claim 12, further comprising inserting an anvil through the side of the target vessel; and wherein said shield is connected to said anvil.

14. The method of claim 13, wherein said anvil includes a channel defined therein, and wherein said cutter is connected to a member movable along at least a portion of said channel.

15. The method of claim 12, further comprising removing said shield from between the end of the graft vessel and the side of the target vessel, after said moving.

16. The method of claim 15, further comprising deforming at least a part of said shield to facilitate said removing.

17. A system for connecting a graft vessel to a target vessel, comprising:

an anvil configured to enter the target vessel through an anvil entry hole;

a holder movable relative to said anvil, said holder configured to deploy at least one connector at a location spaced apart from the anvil entry hole; and

at least one sealer configured to substantially close the anvil entry hole, wherein at least one said sealer is detachably connected to at least one of said anvil and said holder.

18. The system of claim 17, wherein at least one said sealer is a staple.

19. The system of claim 17, wherein at least one said sealer is a grappling hook.

20. The system of claim 17, wherein at least one sealer is a plug.

21. The system of claim 20, further comprising at least one strip connected to said plug.

22. The system of claim 20, further comprising a at least one hook connected to said plug.

23. The system of claim 17, wherein at least one said sealer is a clip.

24. The system of claim 23, wherein said clip includes at least one penetrating element configured to engage the target vessel.

25. The system of claim 23, wherein said clip includes at least two spaced-apart arms.

26. The system of claim 25, wherein said arms are biased toward one another.

27. A method for performing anastomosis between a graft vessel and a target vessel, comprising:

inserting an anvil through the wall of the target vessel, wherein said inserting creates an anvil entry hole; and

connecting an end of the graft vessel to the side of the target vessel with a plurality of connectors, said connectors spaced apart from the anvil entry hole.

28. The method of claim 27, further comprising

withdrawing said anvil through the anvil entry hole; and

substantially sealing the anvil entry hole.

29. The method of claim 28, wherein said sealing comprises applying a sealer to the target vessel in proximity to the anvil entry hole.

30. The method of claim 29, wherein said sealer is detachably connected to said anvil.

31. The method of claim 28, wherein said sealing comprises applying a composition to the target vessel in proximity to the anvil entry hole.

32. The method of claim 31, wherein said composition is an adhesive.

33. The method of claim 28, wherein said sealing comprises applying energy to the target vessel in proximity to the anvil entry hole.

34. A tool for connecting a graft vessel to a target vessel, comprising:

a staple holder; and

an anvil movable relative to said staple holder, said anvil having a channel defined therein; and

an incising element movable along said channel and movable from a stowed position to an active position.

35. The tool of claim 34, wherein said incising element is movable from said stowed position to said active position at least in part by rotation.

36. The tool of claim 34, wherein said incising element is movable from said active position to a withdrawal position.

37. The tool of claim 34, further comprising a member connected to said incising element, wherein motion of said member causes motion of said incising element along said channel.

38. The tool of claim 37, wherein motion of said member causes said incising element to move from said stowed position to said active position.

39. The tool of claim 37, wherein said member is a cable.

40. The tool of claim 37, wherein said member is substantially rigid.

41. The tool of claim 34, further comprising a pusher movable relative to said incising element, wherein said pusher is engageable with said incising element and wherein motion of said pusher causes motion of said incising element along said channel.

42. The tool of claim 41, wherein motion of said pusher causes said incising element to move from said stowed position to said active position.

43. The tool of claim 41, further comprising a clip connected to said incising element, wherein at least one track is defined in said channel and wherein said clip is configured to slide along at least one said track.

44. The tool of claim 34, wherein said incising element includes a lobe defined therein.

45. The tool of claim 44, wherein said anvil includes a space located in said channel, and wherein at least part of said lobe is positioned at least partially within said space when said incising element is in said stowed position.

46. The tool of claim 45, wherein motion of said lobe relative to said space causes said incising element to move from said stowed position to said active position.

47. A system for connecting a graft vessel to a target vessel, comprising:

an anvil; and

a staple holder movable relative to said anvil, said staple holder including at least two spaced-apart arms wherein a plurality of connector bays are defined in each said arm, and wherein at least a selected one set of most proximal said connector bays and most distal said connector bays are offset relative to the remaining said connector bays.

48. The system of claim 47, wherein the direction of said offset is toward the longitudinal centerline of said anvil.

49. The system of claim 47, wherein said connector bays in opposite said arms are paired.

50. A surgical tool for connecting a graft vessel to a target vessel, comprising:

an anvil;

a holder movable relative to said anvil; and

a plurality of connectors retained by said holder; wherein said holder is configured to deploy a selectable number of said connectors.

51. The tool of claim 50, wherein said holder includes an actuator configured to select said number of connectors.

52. The tool of claim 51, wherein said actuator is slidable relative to a remainder of said holder.

53. The tool of claim 52, further comprising at least one attachment element connected to said actuator.

54. The tool of claim 53, further comprising at least one additional attachment element connected to said holder, wherein motion of said actuator changes the distance between at least two said attachment elements.

55. The tool of claim 51, wherein said holder further comprises a plurality of bays defined therein, wherein each said bay is configured to hold at least one said connector.

56. The tool of claim 55, further comprising at least one split deployer, each said split deployer slidable within at least one said bay, wherein each said split deployer is switchable by said actuator between a first state in which it can deploy a corresponding said connector and a second state in which it cannot deploy a corresponding said connector.

57. The tool of claim 55, wherein at least one split deployer includes a first driver element and a second driver element connected by a movable pin, and wherein said

actuator engages said pin to switch said split deployer between said first state and said second state.

58. The tool of claim 51, further comprising a cutter movable relative to said anvil.

59. The tool of claim 58, wherein said cutter is operationally connected to said actuator, wherein motion of said cutter is controlled by said actuator and is related to said number of said connectors selected for deployment.

60. The tool of claim 51, wherein said actuator is configured to measure a dimension of the graft vessel, and wherein said number of said connectors selected for deployment is related to said measurement.

61. The tool of claim 50, wherein at least one said connector is a staple.

62. The tool of claim 50, wherein at least one said connector is at least partially composed of superelastic material.

63. A method for connecting a graft vessel to a target vessel, comprising:

detachably connecting the graft vessel to a tissue effector;

selecting a number of connectors for deployment from said tissue effector; and

deploying said selected number of connectors into said graft vessel and said target vessel.

64. The method of claim 63, further comprising measuring at least one dimension of the graft vessel with said tissue effector, wherein said selecting is based on said measuring.

65. The method of claim 64, wherein said tissue effector includes an actuator; and wherein said measuring includes sliding said actuator relative to a remainder of said tissue effector.

66. The method of claim 63, wherein said tissue effector includes a plurality of bays defined therein and a deployer slidable within each said bay, wherein at least one said connector is located in each said bay; and wherein said selecting includes activating particular deployers.

67. The method of claim 63, wherein said tissue effector includes a plurality of bays defined therein and a deployer slidable within each said bay, wherein at least one said connector is located in each said bay; and wherein said selecting includes selecting particular said deployers for motion.